Level 1: The Basics

You may move on to the next level once the teacher has made sure you got a 100%.

Multiplying Powers

1) $x^3 \cdot x^7$

x^{10}

Dividing Powers

2) $\frac{x^9}{x^3}$

x^6

Power to a Power

3) $(a^5)^2$

a^{10}

Zero Exponents

4) 10^0

1

Negative Exponents

5) n^{-3}

$\frac{1}{n^3}$

Level 2: 2 Properties in 1

You may move on to the next level once the teacher has made sure you got a 100%.

1) $(x^4 \cdot x^2)^3$

$(x^6)^3$

x^{18}

2) $\left(\frac{2^7}{2^4}\right)^5$

$(2^3)^5$

2^{15}

3) $\frac{f^9 f^3}{f^5}$

$\frac{f^{12}}{f^5} = f^7$

4) $\left(\frac{k^4}{k^5}\right)^2$

$= \left(\frac{k^2}{k^{10}}\right)$

$= k^{-8}$

$= \frac{1}{k^8}$

Level 3: With coefficients

You may move on to the next level once the teacher has made sure you got a 100%.

1) $3d^4 \cdot 2d^5$

$6d^9$

2) $\frac{12c^9}{3c^4}$

$4c^5$

3) $(5b^3)^2$

$25b^6$

4) $5x^0$

$5 \cdot 1$

5

5) $6k^{-3}$

$\frac{6}{k^3}$

6) $(3m^2)^3$

$27m^6$

7) $\left(\frac{f^4}{2}\right)^4$

$\frac{f^4}{2} \cdot \frac{f^4}{2} \cdot \frac{f^4}{2} \cdot \frac{f^4}{2}$

$\frac{f^{16}}{16}$

Level 4: Multiple Variables

You may move on to the next level once the teacher has made sure you got a 100%.

1) $-4w^4v^1 \cdot -3w^5v^2$

$12w^9v^3$

2) $\frac{8y^9z^4}{8y^4z^6}$

$y^5 z^{-2}$

$\downarrow$

$\frac{y^5}{z^2}$

3) $(7j^{10}k^5l)^2$

$49j^{20}k^{10}l^2$

4) $\left(\frac{f^0}{3g}\right)^3$

$= \left(\frac{1}{3g}\right)^3$

$= \frac{1}{27g^3}$

Level 5: Harder

You may move on to the next level once the teacher has made sure you got a 100%.

1) $\frac{35p^9q^{-3}}{30p^4q^3}$

$\frac{7}{6} \frac{p^5}{q^3 q^3} \rightarrow \frac{7p^5}{6q^6}$

2) $\left(\frac{r^4 r^{-3} s^3}{4rs^{-3}}\right)^3$

$\left(\frac{r^1 s^3 \cdot s^1}{4r^1}\right)^3$

$\left(\frac{s^4}{4}\right)^3 \rightarrow \frac{s^{12}}{64}$

3) $3mn^{-2} \cdot 6m^{-4}n^5 \cdot \frac{1}{2}m^0 n$

$3 \cdot 6 \cdot \frac{1}{2} \cdot m^1 \cdot m^{-4} \cdot m^0 \cdot n^{-2} \cdot n^5 \cdot n^1$

$9m^{-3} \cdot n^4$

$\frac{9n^4}{m^3}$

Level 6: At Your Own Risk!

You may start on the homework once you have gotten the correct answer.

$\left(\frac{4 \cdot 3 \cdot 2 \cdot x^7 \cdot x^1 \cdot x^{-3} \cdot y^5 \cdot z}{5 \cdot 6 \cdot w^{50} \cdot x^2 \cdot y^8 \cdot y^{-5} \cdot z^{-3}}\right)^2 \cdot \frac{w^{100}}{16x^4y^4z^8}$

$\left(\frac{24x^5y^5z}{30w^{50}x^2y^3z^{-3}}\right)^2 \cdot \frac{w^{100}}{16x^4y^4z^8}$

$\left(\frac{4x^3y^2z^4}{5w^{50}}\right)^2 \cdot \frac{w^{100}}{16x^4y^4z^8}$

$\left(\frac{4x^7y^5 \cdot 3x \cdot 2x^{-3}z}{5w^{50} \cdot 6x^2y^8 \cdot y^{-5}z^{-3}}\right)^2 \cdot \frac{w^{100}}{(2x^1y^1z^2)^4}$

$\left(\frac{16x^6y^2z^8}{25w^{100}}\right) \cdot \frac{w^{100}}{16x^4y^4z^8} = \frac{x^6}{25x^4} = \frac{x^2}{25}$

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